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EXAMINER

MANOHARAN, MUTHUSWAMY GANAPATHY

ART UNIT PAPER NUMBER

2683

DATE MAILED: 10/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/666,373

Applicant(s)

NGAN, JOHN C.W.

Examiner

Muthuswamy G. Manoharan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/16/2003
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's IDS of October 2003 included a PTO 1449 form listing, among other references, PCT publication WO 02/05378. The PCT publication number WO 02/05378 did not match with the document mailed to the Office. Examiner used the publication number from the article mailed to the office. If this is not so, please communicate to the office.

Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1, 4, 5, 11 and 13 are rejected under 35 U.S.C. 103(a) as being anticipated by Akhteruzzaman et al. (hereinafter Akhteruzzaman) in view of Salcic (Proceedings of GeoComputation '97) and further in view of Byrne (US 6708028).

Regarding claim 1, Akhteruzzaman discloses a method of activating call forwarding for a mobile station (Abstract, lines 20-23), comprising the steps of: monitoring a measure of received signal strength at said mobile station; automatically transmitting a first feature code from said mobile station to a wireless network when said

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monitored measure of received signal falls below a threshold level (item 120 in Figure 4), said first feature code activating call forwarding for said mobile station such that incoming calls are directed to a previously programmed directory number (col. 6, lines 41-46; item 126 in Figure 4); automatically transmitting a second feature code from said mobile station to a wireless network, said second feature code deactivating said call forwarding (col. 1, lines 65-67, col. 2, lines 1-2). Akhteruzzaman did not disclose expressly continuing to monitor signal strength at said mobile station. However, Salcic teaches in an analogous art (it is well-known in the art), continuing to monitor signal strength at said mobile station (Section 1.4, Paragraph 3, lines 1-7). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the method of continuing to monitor signal strength at said mobile station. The motivation for doing this would be to know the information regarding when the event of the weak signal link occurs.

Moreover, neither Akhteruzzaman nor Salcic specifically teach when said signal strength rises above said threshold level, said second feature code deactivating said call forwarding. However, Byrne teaches in an analogous art, when said signal strength rises above said threshold level, said second feature code deactivating said call forwarding (Abstract, lines 10-12; Col. 3, lines 65-66, Col. 4, lines 38-43). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the method, when said signal strength rises above said threshold level, said second feature code deactivating said call forwarding. This modification helps to improve the reliability of the communication.

Lastly, it is well known in the art that mobile phone systems forward a call to voicemail if/when a phone is turned "off" or if the signal strength is low (e.g. Inside a building or a tunnel) and forwarding is deactivated when the signal strength is high (e.g. the user move out of the tunnel or building).

Regarding claim 4, Akhteruzzaman discloses the method of claim 1, wherein said mobile station comprises a cellular telephone (item 70 in Figure 1).

Regarding claim 5, Akhteruzzaman discloses the method of claim 1, wherein the previously programmed directory number is changeable by a user of said mobile station by interactively entering said directory number (Col. 6, lines 28-31; Col. 7, lines 10-17; item 114 in Figure 2).

Regarding claim 11, Akhteruzzaman discloses a wireless telephone comprising: circuitry monitoring a measure of received signal strength from a wireless base transceiver station; programmable logic providing instructions for automatically transmitting a first code from said wireless telephone to a wireless network activating call forwarding when said circuitry determines that the received signal strength falls below a threshold level; and programmable logic providing instructions (Col. 6, lines 46-50). Akhteruzzaman did not disclose expressly continuing to monitor signal strength at said mobile station (Paragraph [0056], lines 1-3). However, Salcic teaches in an analogous art, continuing to monitor signal strength at said wireless telephone. Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the method of continuing to monitor signal strength at said wireless telephone.

The motivation for doing this would be to know the information regarding when the event of the weak signal link occurs.

Moreover, neither Akhteruzzaman nor Salcic specifically teach, transmitting a second feature code from said wireless telephone to a wireless network deactivating call forwarding when said circuitry determines that the received signal strength, having previously fallen below threshold level, rises above said threshold. However, Byrne teaches in an analogous art, transmitting a second feature code from said wireless telephone to a wireless network deactivating call forwarding when said circuitry determines that the received signal strength, having previously fallen below threshold level, rises above said threshold (Abstract, lines 10-12; Col. 3, lines 65-66, Col. 4, lines 38-43). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention, transmitting a second feature code from said wireless telephone to a wireless network deactivating call forwarding when said circuitry determines that the received signal strength, having previously fallen below threshold level, rises above said threshold. This modification helps to improve the reliability of the communication.

Regarding claim 13, Akhteruzzaman discloses telephony network comprising a plurality of base transceiver stations and roaming mobile stations subscribing to said network (Figure 1), the improvement comprising; providing a service control node (item 56 in Figure 1) in said cellular telephony network that activates and deactivates a call forwarding service for said roaming mobile stations, wherein said call forward service is activated and deactivated by transmission of first and second feature codes from said roaming mobile stations, respectively, and further wherein said first and second feature

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codes are transmitted when a monitored measure of received signal strength at said mobile stations falls below, and rises above threshold level, respectively(col. 1, lines 65-67, col. 2, lines 1-2). Akhteruzzaman did not disclose expressly monitored measure of received signal strength at said mobile stations rises above threshold level. However, Salcic teaches in an analogous art (it is well-known in the art), monitored measure of received signal strength at said mobile stations rises above threshold level (Section 1.4, Paragraph 3, lines 1-7). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the monitored measure of received signal strength at said mobile stations rises above threshold level. The motivation for doing this would be to know the information regarding when the event of the strong signal link occurs.

Moreover, neither Akhteruzzaman nor Salcic specifically teach when said signal strength rises above said threshold level, said second feature code deactivating said call forwarding. However, Byrne teaches in an analogous art, when said signal strength rises above said threshold level, said second feature code deactivating said call forwarding (Abstract, lines 10-12; Col. 3, lines 65-66, Col. 4, lines 38-43). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the method, when said signal strength rises above said threshold level, said second feature code deactivating said call forwarding. This modification helps to improve the reliability of the communication.

Claims 2,3,7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akhteruzzaman in view of Salcic and further in view of Byrne and further in view of Lundborg (U.S. 6,782,262).

Regarding claim 2, Akhteruzzaman in view of Salcic and further in view of Byrne discloses all the particulars of the claim, except wherein said step of monitoring a measure of received signal strength comprises the step of monitoring the ratio E_c / I_o , wherein E_c is a measure of carrier strength and I_o is a measure of interference.

However, Lundborg teaches in an analogous art, step of monitoring a measure of received signal strength comprises the step of monitoring the ratio E_c / I_o , wherein E_c is a measure of carrier strength and I_o is a measure of interference (Col. 9, lines 8-10).

Quality of a digital channel is measured by bit error rate (BER) on the up or down link and is related to the ratio E_c / I_o . Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use ratio E_c / I_o for setting the signal strength threshold.

Regarding claim 3, Akhteruzzaman in view of Salcic and further in view of Byrne discloses all the particulars of the claim, except wherein said step of monitoring a measure of received signal strength comprises the step of monitoring a signal to noise ratio of a received signal from a base transceiver station in a cellular telephone network. However, Lundborg teaches in an analogous art, step of monitoring a measure of received signal strength comprises the step of monitoring a signal to noise ratio of a received signal from a base transceiver station in a cellular telephone network (Col. 9, lines 20-22). Speech quality for an analog channel is measured by the signal to noise ratio on the up or down link. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use signal to noise ratio of a received signal

from a base transceiver station in a cellular telephone network as a measure of received signal strength.

Regarding claim 7, Akhteruzzaman in view of Salcic and further in view of Byrne discloses all the particulars of the claim, except wherein the threshold level is determined by an element in said wireless network and transmitted to said mobile station. However, Lundborg teaches in an analogous art, the method of call forwarding for a mobile station, wherein the threshold level is determined by an element in said wireless network and transmitted to said mobile station (Col. 9, lines 1-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the method, wherein the threshold level is determined by an element in said wireless network and transmitted to said mobile station. The variation of the threshold based on the mobile station has to be taken into account in order to improve the efficiency of communication.

Regarding claim 10, Akhteruzzaman in view of Salcic and further in view of Byrne discloses all the particulars of the claim, except wherein the first feature code is transmitted if the monitored measure of received signal strength remains below the threshold level for predetermined period of time. However, Lundborg teaches in an analogous art, discloses the method, wherein the first feature code is transmitted if the monitored measure of received signal strength remains below the threshold level for predetermined period of time (items 64 and 66 in Figure 6; 51-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the method; wherein the first feature code is transmitted if the monitored measure of

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received signal strength remains below the threshold level for predetermined period of time. This waiting period is required in order to avoid performing call forward too often.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akhteruzzaman in view of Salcic and further in view of Byrne and further in view of Lo (U.S. RE37, 301E).

Regarding claim 6, Akhteruzzaman in view of Salcic and further in view of Byrne discloses all the particulars of the claim, except wherein said feature code is sent to said wireless network over an access channel. However, Lo teaches in an analogous art, wherein said feature code is sent to said wireless network over an access channel (Col. 2, lines (66-67)). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the method of activating call forwarding for a mobile station wherein said feature code is sent to said wireless network over an access channel. This method of sending the feature code through access channel would improve the transmission efficiency and reduce the access delay.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akhteruzzaman in view of Salcic and further in view of Byrne and further in view of Jensen (U.S. 2002/0022480).

Regarding claim 8, Akhteruzzaman in view of Salcic and further in view of Byrne discloses all the particulars of the claim, except wherein the threshold level varies depending upon the type of mobile station. However, Jensen teaches in an analogous art, the method of call forwarding for a mobile station, wherein the threshold level varies depending upon the type of mobile station (Paragraph [0015], lines (6-13)). Therefore, it

would have been obvious to one of ordinary skill in the art at the time of the invention to use the method, wherein the threshold level varies depending upon the type of mobile station. By including all the factors that are affecting the threshold one can improve the efficiency and performance of cellular system.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akhteruzzaman in view of Salcic and further in view of Byrne and further in view of Chawla et al. (hereinafter Chawla) (U.S. 6,496,700).

Regarding claim 9, Akhteruzzaman in view of Salcic and further in view of Byrne discloses all the particulars of the claim except wherein the threshold level lies in the range of -85dB to -90 dB. However, Chawla teaches in an analogous art, wherein the threshold level lies in the range of -85dB to -90 dB (col. 19, lines 37-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the threshold level lies in the range of -85dB to -90 dB.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akhteruzzaman in view of Salcic and further in view of Byrne and further in view of Haub (US 2004/0152429).

Regarding claim 12, Akhteruzzaman in view of Salcic and further in view of Byrne discloses all the particulars of the claim except wherein said wireless telephone operates in a CDMA network and wherein said circuitry monitors the ratio E_c / I_o , wherein E_c is a measure of carrier strength and I_c is a measure of interference. However, Haub teaches in an analogous art, discloses the wireless telephone, wherein said wireless telephone operates in a CDMA network and wherein said circuitry

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monitors the ratio E_c / I_o , wherein E_c is a measure of carrier strength and I_o is a measure of interference (Paragraph [0022], lines (11-15)). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the wireless telephone, wherein said wireless telephone operates in a CDMA network and wherein said circuitry monitors the ratio E_c / I_o , wherein E_c is a measure of carrier strength and I_o is a measure of interference.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akhteruzzaman in view of Salcic and further in view of Byrne and further in view of Kisse et al. (hereinafter Kisse) (US 6567665).

Regarding claim 14, Akhteruzzaman in view of Salcic and further in view of Byrne discloses all the particulars of the claim, except wherein the service control node sets the threshold level. However, Kisse teaches in an analogous art, wherein the service control node sets the threshold level (Col. 13, lines 10-13). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have the service control node sets the threshold level. Since the service control node is forwarding the calls, it is convenient to have the service control node sets the threshold level.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akhteruzzaman in view of Salcic and further in view of Byrne and further in view of Balachandran (US 5594943).

Regarding claim 15, Akhteruzzaman in view of Salcic and further in view of Byrne discloses all the particulars of the claim, except wherein the threshold level is determined by reference to a level in which calls are dropped. However, Balachandran

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teaches in an analogous art wherein the threshold level is determined by reference to a level in which calls are dropped (Col. 2, lines 24-25). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the threshold level, wherein the threshold level is determined by reference to a level in which calls are dropped. This threshold level represent performance threshold, which can be used to determine whether the air link can reliably transmit information.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akhteruzzaman in view of Salcic and further in view of Byrne and further in view of Hilliard et al. (US 6876949).

Regarding claim 16, Akhteruzzaman in view of Salcic and further in view of Byrne teaches all the particulars of the claim except wherein the threshold level is offset from a dropped call level by a fixed amount. However, Hilliard teaches in an analogous art ("Error analysis" in Statistics, Also providing an offset using standard deviation is well known in the art) teaches a method wherein the threshold level is offset by a fixed amount (Col. 15, lines 34-38). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the threshold level, wherein the threshold level is offset from a dropped call level by a fixed amount. This modification provides a compromise between signal quality and bad call forwarding decision.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akhteruzzaman in view of Salcic and further in view of Byrne and further in view of Jensen (U.S. 2002/0022480).

Regarding claim 17, Akhteruzzaman in view of Salcic and further in view of Byrne discloses all the particulars of the claim, except wherein the threshold level varies depending upon the type of mobile station. However, Jensen teaches in an analogous art, the method of call forwarding for a mobile station, wherein the threshold level varies depending upon the type of mobile station (Paragraph [0015], lines (6-13). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the method, wherein the threshold level varies depending upon the type of mobile station. By including all the factors that are affecting the threshold one can improve the efficiency and performance of cellular system.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Proctor et al. (US2003/0003918) teaches signal strength measurements by the wireless device (Paragraph [0049], lines 3-10) and also teaches that measuring signal strength and signal-to-noise ratio are well known to those skilled in the art of wireless technology.


Chen et al. (US 6650912) teaches that it is well known in the art that monitoring the signal strength of the pilot channel as a ratio E_c / I_o , wherein E_c is a measure of carrier strength and I_o is a measure of interference (Col. 5, lines 31-37)

Smith et al. (U.S. 6073029) teaches telephony network comprising plurality of base transceiver stations and roaming mobile stations subscribing to said network and also a service control node in said telephony network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Muthuswamy G. Manoharan whose telephone number is 571-272-5515. The examiner can normally be reached on 7:30AM-4: 30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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